COMMON AREA SPLIT SYSTEM HEAT PUMPS

TAG	LOCATION/AREA SERVED	INDOOR MODEL No. (AH)	OUTDOOR MODEL No. (HP)	NOM. TONS	MBH TOT. COOL	MBH SENS. COOL	MBH INT. HEAT	TOTAL CFM	OA CFM	ESP (IN. W.G.)	FAN HP	AUXILLARY HEATING KW	ACCESSORIES
AH/HP D-1	BASEMENT 1 - MAINTENANCE 1	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	40	0.5	1/3	6.0	1,2,3,4,5,6,7,8,9
AH/HP D-2	BASEMENT 1 - MAINTENANCE 2	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	30	0.5	1/3	6.0	1,2,3,4,5,6,7,8,9
AH/HP D-3	BASEMENT 1 - LOADING AREA	ARUF36	SSZ14036	3.5	39.3	31.4	40.0	1410	220	0.5	1/2	10.0	1,2,3,4,5,6,7,8,9
AH/HP D-4	BASEMENT 1 - TRASH ROOM	ARUF24	SSZ14024	2.0	23.1	19.2	23.0	755	-	0.5	1/3	8.0	1,2,3,4,5,6,7,8,9
AH/HP D-5	LEVEL 1 - BASEMENT 1 CORR.	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	75	0.5	1/3	6.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-6	LEVEL 1 - FITNESS	ARUF60	SSZ14060	5.0	53.9	42.4	58.0	1880	305	0.5	3/4	15.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-7	LEVEL 1 - COMMON AREAS	ARUF24	SSZ14024	2.0	23.1	19.2	23.0	755	105	0.5	1/3	8.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-8	LEVEL 1 - CATERING	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	85	0.5	1/3	6.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-9	LEVEL 1 - PRIVATE DINING	ARUF30	SSZ14030	3.0	32.4	24.4	34.0	1220	190	0.5	1/2	10.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-10	LEVEL 1 - WINE BAR/CLUB	ARUF60	SSZ14060	5.0	53.9	42.4	58.0	1880	365	0.5	3/4	15.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-11	LEVEL 1 - LIBRARY/MAIL ROOM	ARUF36	SSZ14036	3.5	39.3	31.4	40.0	1410	245	0.5	1/2	10.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-12	LEVEL 1 - LOBBY	ARUF24	SSZ14024	2.0	23.1	19.2	23.0	755	110	0.5	1/3	8.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-13	LEVEL 1 - OFFICE SPACE	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	75	0.5	1/3	6.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-14	LEVEL 1 - OFFICE SPACE	ARUF30	SSZ14030	3.0	32.4	24.4	34.0	1220	210	0.5	1/2	10.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-15	LEVEL 1 - SOUTH CORRIDOR	ACNF18	SSZ14024	1.5	15.4	13.1	17.0	635	65	0.4	1/5	5.0	2,6,7,8,9,10,11,12
AH/HP D-16	LEVEL 2 - THEATER	ARUF60	SSZ14060	4.0	44.2	35.1	44.0	1880	295	0.5	3/4	15.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-17	LEVEL 2 - LOUNGE	ARUF60	SSZ14060	5.0	53.9	42.4	58.0	1880	360	0.5	3/4	15.0	1,3,4,5,6,7,8,9,14,15
AH/HP D-18	BASEMENT 1 - VESTIBULE	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	-	0.5	1/3	6.0	1,3,4,5,6,7,8,9,14,15,16
AH/HP D-19	BASEMENT 1 - VESTIBULE	ARUF18	SSZ14018	1.5	16.0	12.2	17.0	550	-	0.5	1/3	6.0	1,3,4,5,6,7,8,9,14,15,16

NOTES:

A. COOLING CAPACITIES ARE BASED ON 105°F AMBIENT, 80°F DB/67°F WB ENTERING AIR TEMPERATURE. INTEGRATED HEATING CAPACITIES BASED ON 22°F AMBIENT.
B. THE COMPRESSOR MANUFACTURER SHALL PROVIDE A REFRIGERANT PIPING DIAGRAM APPROVED BY THE FACTORY FOR TYPICAL SYSTEMS SHOWING COMPONENTS SUCH AS SUCTION LINE ACCUMULATOR AND RECOMMENDED PIPE SIZES FOR PROPER OPERATION.
C. 14 SEER MINIMUM UNITS WITH R-410a REFRIGERANT.
D. ROOF MOUNTED OUTDOOR UNITS AND INDOOR UNITS SHALL BE INSTALLED PER PLANS, MANUFACTURER'S REQUIREMENTS, AND CODE REQUIREMENTS.
E. PRIMARY CONDENSATE SHALL BE SIZED, TRAPPED, AND ROUTED AS SHOWN ON PLANS. REFER TO MECHANICAL AND PLUMBING PLANS AND DETAILS.
F. MECHANICAL VENTILATION IS REQUIRED TO PROVIDE VENTILATION, REFER TO OA CFM IN SCHEDULE FOR AMOUNT OF OA AIR.
G. REFER TO AIR HANDLER DETAILS, HEAT PUMP DETAIL, GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
H. ADJUST MOTOR SPEED TAP IN FIELD AS NEEDED TO PROVIDE TOTAL CFM LISTED FOR EACH AIR HANDLER.
I. ELECTRIC HEAT SHALL OPERATE ONLY IN DEFROST MODE OR WHEN THE HEATING LOAD CANNOT BE MET WITH THE COMPRESSOR ALONE.
J. UNITS REQUIRING OUDOOR AIR ARE TO BE PROVIDED WITH MOTORIZED DAMPER (FAIL OPEN) INTERLOCKED TO AIR HANDLER FAN.

ACCESSORIES: (PROVIDE ALL ACCESSORIES AS REQUIRED, OR RECOMMENDED BY THE UNIT MANUFACTURER FOR THE SPECIFIC INSTALLATION.)

1. FIELD INSTALLED ELECTRIC HEAT KIT FOR HEAT.
2. 7-DAY PROGRAMMABLE THERMOSTAT WITH MANUAL OVER-RIDE, SETBACK, AND TIME DELAY RELAY, PER IECC, INTERLOCKED TO AH & HP.
3. REMOVABLE/THROWAWAY FILTER IN FILTER RACK.
4. EXTERNALLY MOUNTED DISCONNECT FOR OUTDOOR UNIT IS BY ELECTRICAL CONTRACTOR.
5. PROVIDE FLOAT SAFE-T-SWITCH IN DRAIN FOR SECONDARY CONDESATE.
6. FACTORY MOUNTED THERMAL EXPANSION VALVE, IF REQUIRED FOR 14.0 SEER RATING.
7. BI-FLOW REFRIGERANT FILTER DRYER AT HEAT PUMP, IF REQUIRED BY MANUFACTURER.
8. OUTDOOR HEAT PUMP THERMOSTAT, ADJUSTABLE.
9. HEAT PUMP SHUT OFF KIT.
10. FACTORY-INSTALLED ELECTRIC HEAT WITH THERMAL OVERLOADS.
11. REMOVABLE/THROWAWAY FILTER IN RETURN GRILLE.
12. DISCONNECT FOR INDOOR UNIT IS BY THE ELECTRICAL CONTRACTOR.
13. PROVIDE MANUFACTURER CEILING ACCESS PANEL, WITH RUBBER GASKET SEAL, FOR UNIT MAINTENANCE AND REMOVAL.
14. TEMPERATURE SENSOR TO BE INTERFACED WITH BUILDING AUTOMATION SYSTEM.
15. MOTORIZED DAMPER TO BE INTERFACED WITH BUILDING AUTOMATION SYSTEM.
16. OPERABLE DOORS SHALL PROVIDE SUFFICIENT VENTILATION PER IMC CODE REQUIREMENTS.

NOTE:
HEATER KW SHOWN IS NOMINAL SIZE.
DERATE HEATER FOR 208V.

SELECTIONS ARE BASED ON PRODUCTS BY: GOODMAN.

DUCTLESS SPLIT SYSTEM HEAT PUMPS

TAG	INDOOR MODEL NO. (AH)	OUTDOOR MODEL NO. (HP)	NOM. TONS	TOTAL COOLING (MBH)	TOTAL HEATING (MBH)	AIRFLOW (CFM)	OA (CFM)	LOCATION/SERVICE	ACCESSORIES
AH/HP-D-L	RAV-SP180UT-UL	RAV-SP240AT2-UL	1.5	19.0	18.8	450	20	BASEMENT 1/2 - ELEVATOR LOBBY	1,2,3,4,5,6,7,8,9
AH/HP-D-DW	RAV-SP180UT-UL	RAV-SP240AT2-UL	1.5	19.0	18.8	450	25	BASEMENT 1 - DOG WASH	1,2,3,4,5,6,7,8,9

NOTES:
A. COOLING CAPACITIES BASED ON 105°F AMBIENT COOLING, 80°F DB/67°F WB ENTERING AIR TEMPERATURE AND 22°F AMBIENT HEATING.
B. ROUTE 3/4" CD AS SHOWN ON PLANS. REFERENCE PLUMBING DRAWINGS FOR EXACT DRAIN LOCATIONS.
C. 14-SEER MINIMUM UNITS WITH R-410a REFRIGERANT.

ACCESSORIES :
1. MICROPROCESSOR CONTROL WITH NON-REMOVABLE MOUNTING BRACKET.
2. DISCONNECT SWITCH FOR INDOOR UNIT SHALL BE BY DIVISION 26.
3. DISCONNECT SWITCH FOR OUTDOOR UNIT SHALL BE BY DIVISION 26.
4. STAND ALONE CONDENSATE PUMP W/ CHECK VALVE ON INDOOR UNIT (FIELD MOUNTED).
5. INTEGRAL, PERMANENT, WASHABLE FILTER.
6. PRE-CHARGED REFRIGERANT LINE SET.
7. PROGRAMMABLE THERMOSTAT.
8. TEMPERATURE SENSOR TO BE INTERFACED WITH BUILDING AUTOMATION SYSTEM.
9. MOTORIZED DAMPER TO BE INTERFACED WITH BUILDING AUTOMATION SYSTEM.

SELECTIONS ARE BASED ON PRODUCTS BY CARRIER

GARAGE VENTILATION CONTROL SYSTEM

CARBON MONOXIDE/NITROGEN DETECTION SYSTEM: PROVIDE (1) STAND ALONE GAS DETECTION SYSTEM WITH REMOTE SENSORS PER PARKING GARAGE LEVEL MANUFACTURED BY VULCAIN. INCLUDED WITH THE CARBON MONOXIDE/NITROGEN CONTROL SYSTEM WILL BE A WATER/DUST TIGHT CORROSION RESISTANT CONTROL PANEL ENCLOSURE AND AUTOMATIC RESETTING THERMAL CIRCUIT FUSE. MANUFACTURER SHALL BE VULCAIN, OR APPROVED EQUAL.

EVERY GAS DETECTION CONTROL PANEL AND REMOTE SENSOR SHALL BE INTERLOCKED TO THE FAN(S) AS NOTED ON THESE PLANS AND SCHEDULES. MECHANICAL VENTILATION SYSTEMS FOR ENCLOSED PARKING GARAGES ARE NOT REQUIRED TO OPERATE CONTINUOUSLY WHERE THE SYSTEM IS ARRANGED TO OPERATE AUTOMATICALLY UPON DETECTION OF A CONCENTRATION OF CARBON MONOXIDE OF 25 PARTS PER MILLION (PPM). THE SYSTEM SHALL NOT REDUCE THE VENTILATION RATE BELOW 0.05 CFM/SQFT OF FLOOR AREA AND SHALL BE CAPABLE OF PRODUCING A VENTILATION RATE OF 0.75 CFM/SQFT OF FLOOR AREA.

MODEL NUMBERS:
CONTROL PANEL: VULCAIN 301C (LOCATE PANEL AS SHOWN ON PLANS.)
REMOTE CO/NO DETECTION SENSOR: HONEYWELL E3POINT (LOCATE SENSORS AS SHOWN ON PLANS.)

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
MD00.00	NOTES AND SCHEDULES
MD00.01	SCHEDULES
MD00.02	DETAILS
MD00.03	DETAILS
MD00.04	HVAC RISERS
MD20.B1	BUILDING 'D' - BASEMENT 1 - FLOOR PLAN
MD20.B2	BUILDING 'D' - BASEMENT 2 - FLOOR PLAN
MD21.01	BUILDING 'D' - LEVEL 1 - FLOOR PLAN
MD21.02	BUILDING 'D' - LEVEL 2 - FLOOR PLAN
MD21.03	BUILDING 'D' - LEVEL 3 - FLOOR PLAN
MD21.04	BUILDING 'D' - LEVEL 4 - FLOOR PLAN
MD21.05	BUILDING 'D' - LEVEL 5 - FLOOR PLAN
MD21.06	BUILDING 'D' - LEVEL 6 - FLOOR PLAN
MD21.07	BUILDING 'D' - LEVEL 7 - FLOOR PLAN
MD21.08	BUILDING 'D' - ROOF PLAN
MD42.01	ENLARGED PLANS
MD42.02	ENLARGED PLANS
MD42.03	ENLARGED PLANS
MD42.04	ENLARGED PLANS
MD43.01	UNIT PLANS
MD43.02	UNIT PLANS
MD43.03	UNIT PLANS
MD43.04	UNIT PLANS
MD43.05	UNIT PLANS
MD43.06	UNIT PLANS
MD43.07	UNIT PLANS
MD43.08	UNIT PLANS
MD43.09	UNIT PLANS
MD43.10	UNIT PLANS - LEVEL 7
MD43.11	UNIT PLANS - LEVEL 7
MD43.12	UNIT PLANS - LEVEL 7
MD43.13	UNIT PLANS - LEVEL 7

DWELLING UNIT SPLIT SYSTEM HEAT PUMP

TAG	AREA SERVED	INDOOR MODEL No. (AH)	OUTDOOR MODEL No. (HP)	NOM. TONS	MBH TOT. COOL	MBH SENS. COOL	MBH INT. HEAT	TOTAL CFM	OA CFM	ESP (IN. W.G.)	FAN HP	AUXILLARY HEATING KW	ACCESSORIES
AH/HP D-S-1	DWELLING UNIT	AWUF18	SSZ14018	1.5	15.4	23.1	17.0	635	-	0.4	1/5	5.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-1	DWELLING UNIT	AWUF18	SSZ14018	1.5	15.4	23.1	17.0	635	-	0.4	1/5	5.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-2	DWELLING UNIT	AWUF24	SSZ14024	2.0	21.8	20.0	23.0	770	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-3	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-3R	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	40	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12,13,14
AH/HP D-A-4	DWELLING UNIT	AWUF24	SSZ14024	2.0	21.8	20.0	23.0	770	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-5	DWELLING UNIT	AWUF24	SSZ14024	2.0	21.8	20.0	23.0	770	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-6	DWELLING UNIT	AWUF24	SSZ14024	2.0	21.8	20.0	23.0	770	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-7	DWELLING UNIT	AWUF24	SSZ14024	2.0	21.8	20.0	23.0	770	-	0.4	1/5	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-7R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	40	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-A-8	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/3	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-9	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/3	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-10	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/3	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-11	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/3	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-12	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-12R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	40	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-A-13	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-A-13R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	40	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-B-1	DWELLING UNIT	AWUF30	SSZ14030	2.5	25.0	21.1	26.4	1085	-	0.4	1/3	8.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-1R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	60	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-B-2	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-2R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	60	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,14
AH/HP D-B-3	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-3R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	60	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,14
AH/HP D-B-4	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-4R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	60	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,14
AH/HP D-B-5	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	-	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12
AH/HP D-B-6	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-6R	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	60	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12,14
AH/HP D-B-7	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-8	DWELLING UNIT	AWUF37	SSZ14036	3.0	28.4	23.8	34.0	1180	-	0.4	1/2	10.0	1,3,4,6,7,8,9,10,11,12
AH/HP D-B-9	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	-	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12
AH/HP D-B-9R	DWELLING UNIT	ARUF48	SSZ14048	4.0	44.2	35.1	44.0	1675	60	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12,14
AH/HP D-B-10	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	-	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12
AH/HP D-B-10R	DWELLING UNIT	ARUF60	SSZ14060	5.0	54.2	42.4	58	1880	60	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-B-11	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	-	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12
AH/HP D-B-11R	DWELLING UNIT	ARUF60	SSZ14060	5.0	53.9	42.4	58	1880	60	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-B-12	DWELLING UNIT	ARUF42	SSZ14042	3.5	39.3	31.4	40.0	1410	-	0.5	1/2	10.0	2,3,5,7,8,9,10,11,12
AH/HP D-B-12R	DWELLING UNIT	ARUF60	SSZ14060	5.0	53.9	42.4	58	1880	60	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12,13,14
AH/HP D-C-1	DWELLING UNIT	ARUF48	SSZ14048	4.0	44.2	35.1	44.0	1675	-	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12
AH/HP D-C-2	DWELLING UNIT	ARUF48	SSZ14048	4.0	44.2	35.1	44.0	1675	-	0.5	3/4	15.0	2,3,5,7,8,9,10,11,12

NOTES:

A. COOLING CAPACITIES ARE BASED ON 105°F AMBIENT, 75°F DB/63°F WB ENTERING AIR TEMPERATURE. INTEGRATED HEATING CAPACITIES BASED ON 22°F AMBIENT.
B. THE COMPRESSOR MANUFACTURER SHALL PROVIDE A REFRIGERANT PIPING DIAGRAM APPROVED BY THE FACTORY FOR TYPICAL SYSTEMS SHOWING COMPONENTS SUCH AS SUCTION LINE ACCUMULATOR AND RECOMMENDED PIPE SIZES FOR PROPER OPERATION.
C. 14 SEER MINIMUM UNITS WITH R-410a REFRIGERANT.
D. ROOF MOUNTED OUTDOOR UNITS AND INDOOR UNITS SHALL BE INSTALLED PER PLANS, MANUFACTURER'S REQUIREMENTS, AND CODE REQUIREMENTS.
E. PRIMARY CONDENSATE SHALL BE SIZED, TRAPPED, AND ROUTED AS SHOWN ON PLANS. REFER TO MECHANICAL AND PLUMBING PLANS AND DETAILS.
F. OPERABLE WINDOWS AND DOORS SHALL PROVIDE SUFFICIENT VENTILATION PER IMC CODE REQUIREMENTS, REFER TO ARCHITECTURAL PLANS FOR CALCULATIONS.
G. REFER TO AIR HANDLER DETAILS, HEAT PUMP DETAIL, GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
H. ADJUST MOTOR SPEED TAP IN FIELD AS NEEDED TO PROVIDE TOTAL CFM LISTED FOR EACH AIR HANDLER.
I. ELECTRIC HEAT SHALL OPERATE ONLY IN DEFROST MODE OR WHEN THE HEATING LOAD CANNOT BE MET WITH THE COMPRESSOR ALONE.
J. UNITS SHOWING OUTDOOR AIR CFM REFER TO 7TH LEVEL UNITS ONLY.

ACCESSORIES: (PROVIDE ALL ACCESSORIES AS REQUIRED, OR RECOMMENDED BY THE UNIT MANUFACTURER FOR THE SPECIFIC INSTALLATION.)

1. FACTORY-INSTALLED ELECTRIC HEAT WITH THERMAL OVERLOADS, OUTPUT SPECIFIED ON SCHEDULE.
2. FIELD INSTALLED ELECTRIC HEAT KIT FOR HEAT, OUTPUT SPECIFIED ON SCHEDULE.
3. 7-DAY PROGRAMMABLE THERMOSTAT WITH MANUAL OVER-RIDE, SETBACK, AND TIME DELAY RELAY, PER IECC, INTERLOCKED TO AH & HP.
4. REMOVABLE/THROWAWAY FILTER IN INTEGRAL FILTER RACK.
5. REMOVABLE/THROWAWAY FILTER IN FILTER RACK.
6. INTEGRAL DISCONNECT FOR INDOOR UNIT IS BY THE EQUIPMENT MANUFACTURER. COORDINATE DISCONNECT REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
7. EXTERNALLY MOUNTED DISCONNECT FOR OUTDOOR UNIT IS BY ELECTRICAL CONTRACTOR.
8. PROVIDE FLOAT SAFE-T-SWITCH IN DRAIN FOR SECONDARY CONDESATE.
9. FACTORY MOUNTED THERMAL EXPANSION VALVE, IF REQUIRED FOR 14.0 SEER RATING.
10. BI-FLOW REFRIGERANT FILTER DRYER AT HEAT PUMP, IF REQUIRED BY MANUFACTURER.
11. OUTDOOR HEAT PUMP THERMOSTAT, ADJUSTABLE.
12. HEAT PUMP SHUT OFF KIT.
13. PROVIDE SMOKE DETECTOR IN RETURN PLENUM.
14. PROVIDE SOLER AND PALAU MODEL TD FAN FOR CONTINUOUS OUTDOOR AIR VENTILATION. PROVIDE FATORY SPEED CONTROLLER TO BALANCE TO INDICATED CFM.

NOTE:
HEATER KW SHOWN IS NOMINAL SIZE.
DERATE HEATER FOR 208V.

SELECTIONS ARE BASED ON PRODUCTS BY: GOODMAN.

100% OUTSIDE AIR UNITS (GAS-FIRED)

TAG	MODEL No.	AREA SERVED	OA TOTAL CFM	FAN HP	ESP	COOLING		HEATING	UNIT WEIGHT (LBS.)	ACCESSORIES
						TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	INPUT (MBH)		
OAU-D-1	RN-020-8	BUILDING 'D' CORR.	2500	3.0	2.0	219.5	109.1	270.0	2527	1,2,3,4,5,6,7,8,9,10,11
OAU-D-2	RN-020-8	BUILDING 'D' CORR.	2500	3.0	2.0	219.5	109.1	270.0	2527	1,2,3,4,5,6,7,8,9,10,11

NOTES:
A. COOLING CAPACITY BASED ON 105°F DB AND 75°F WB.
B. ESP DOES NOT INCLUDE COIL, CASING OR FILTER LOSSES.
C. UNIT WEIGHT INCLUDES CURB.
D. R-410A REFRIGERANT.
E. OAU TO BE INTERFACED WITH BUILDING AUTOMATION SYSTEM.

ACCESSORIES :
1. EQUIPMENT SHALL BE MOUNTED ON 14" HIGH INSULATED, DOUBLE WALL ROOF CURB.
2. FACTORY MOUNTED CONTROLS WITH VANDAL PROOF LOCK.
3. SMOKE DETECTOR IN SUPPLY AIR DUCT.
4. DIGITAL MODULATING SCROLL COMPRESSOR.
5. INTEGRAL FILTER RACK WITH 2" PRE-FILTERS AND 4" MERV 13 PLEATED FILTERS.
6. MODULATING HOT GAS REHEAT CONDENSER ENERGY RECOVERY COIL WITH MODULATING DISCHARGE TEMPERATURE CONTROL, SET AT 70°F (ADJ.).
7. SINGLE POINT POWER CONNECTION WITH UNIT MOUNTED DISCONNECT AND VARIABLE FREQUENCY DRIVE.
8. DISCHARGE FLEX CONNECTIONS.
9. PROVIDE DE-HUMIDISTAT/DEWPOINT SENSOR/THERMOSTAT AT TOP LEVEL AND AVERAGING SENSOR AT LOWEST OCCUPIED LEVEL.
10. PROVIDE SECONDARY CONDENSATE SHUTOFF USING FLOAT SAFE-T-SWITCH IN DRAIN PAN.
11. PROVIDE SCHNEIDER ELECTRIC CONTROLS.

SELECTIONS ARE BASED ON PRODUCTS BY AAON.

DX COOLING ONLY DUCTLESS SPLITS

TAG	INDOOR MODEL NO. (AH)	OUTDOOR MODEL NO. (CU)	NOM. TONS	TOTAL COOLING (MBH)	AIRFLOW (CFM)	LOCATION/SERVICE	ACCESSORIES
AH/CU-D-EC1	40QNC01824	38HDF018	1.5	16.6	460	LEVEL 7 - ELEVATOR CONTROLS CLOSET	1,2,3,4,5,6,7
AH/CU-D-EC2	40QNC01824	38HDF024	2.0	22.0	525	BASEMENT 1 - ELEVATOR CONTROLS CLOSET	1,2,3,4,5,6,7
AH/CU-D-ER1	40QNC01824	38HDF024	2.0	22.0	525	BASEMENT 1 - ELECTRIC/MDF ROOM	1,2,3,4,5,6,7
AH/CU-D-ER2	40QNC01824	38HDF018	1.5	16.6	460	LEVELS 5/7 - ELECTRIC ROOMS	1,2,3,4,5,6,7
AH/CU-D-IT	40QNC01824	38HDF018	1.5	16.6	460	LEVEL 1 - IT ROOM	1,2,3,4,5,6,7
AH/CU-D-MDF	40QNC01824	38HDF018	1.5	16.6	460	BASEMENT 1 - ELECTRIC/MDF ROOM	1,2,3,4,5,6,7
AH/CU-D-RL	40QNC030	38HDF030	2.5	27.0	630	ROOF - LANTERN	1,2,3,4,5,6,7

NOTES:
A. COOLING CAPACITIES BASED ON 105°F AMBIENT COOLING, 80°F DB/67°F WB ENTERING AIR TEMPERATURE AND 22°F AMBIENT HEATING.
B. ROUTE 3/4" CD AS SHOWN ON PLANS. REFERENCE PLUMBING DRAWINGS FOR EXACT DRAIN LOCATIONS.
C. 14-SEER MINIMUM UNITS WITH R-410a REFRIGERANT.

ACCESSORIES :
1. MICROPROCESSOR CONTROL WITH NON-REMOVABLE MOUNTING BRACKET.
2. DISCONNECT SWITCH FOR INDOOR UNIT SHALL BE BY DIVISION 26.
3. DISCONNECT SWITCH FOR OUTDOOR UNIT SHALL BE BY DIVISION 26.
4. STAND ALONE CONDENSATE PUMP W/ CHECK VALVE ON INDOOR UNIT (FIELD MOUNTED).
5. INTEGRAL, PERMANENT, WASHABLE FILTER.
6. PRE-CHARGED REFRIGERANT LINE SET.
7. PROGRAMMABLE THERMOSTAT.

SELECTIONS ARE BASED ON PRODUCTS BY CARRIER.

HVAC NOTES

GENERAL NOTES

1. ALL MECHANICAL EQUIPMENT AND INSTALLATIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE 2012 MECHANICAL CODE, THE 2012 INTERNATIONAL BUILDING CODE, ASHRAE 90.1-2010, STATE AND LOCAL AMENDMENTS, NFPA 90A, UNDERWRITERS LABORATORIES (OR ETL) AND ALL APPLICABLE LOCAL CODES AND ORDINANCES.

2. THE LOCATIONS, ARRANGEMENT AND EXTENT OF EQUIPMENT, PIPING, SUPPORTS, DEVICES, CONDUIT, AND OTHER APPURTENANCES RELATED TO THE INSTALLATION OF THE MECHANICAL AND ELECTRICAL WORK SHOWN ARE APPROXIMATE. THE DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE THE DRAWINGS, BUT REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS OF BUILDING COMPONENTS. SHOULD A CONFLICT EXIST BETWEEN THE ARCHITECTURAL AND ENGINEERING DRAWINGS REGARDING DIMENSIONS, SCALE, ETC., NOTIFY THE ARCHITECT IMMEDIATELY.

3. MATERIALS, EQUIPMENT OR LABOR NOT INDICATED, BUT WHICH CAN BE REASONABLY INFERRED TO BE NECESSARY FOR A COMPLETE INSTALLATION SHALL BE PROVIDED. THE DRAWINGS AND SPECIFICATIONS DO NOT UNDERTAKE TO INDICATE EVERY ITEM OF MATERIAL, EQUIPMENT OR LABOR REQUIRED TO PRODUCE A SAFE, COMPLETE AND PROPERLY OPERATING SYSTEM.

4. PRIOR TO PURCHASING ANY MATERIALS OR STARTING ANY WORK, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DUCTWORK SIZES AND LOCATIONS, EQUIPMENT, ETC. SHOWN ON THE DRAWINGS OR AFFECTING THIS WORK AND SHALL REPORT ANY DEVIATIONS TO THE ARCHITECT.

5. SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE ARCHITECT PRIOR TO ORDERING, PURCHASING, OR FABRICATING ANY MECHANICAL EQUIPMENT. SHOP DRAWINGS SHALL INCLUDE: ALL EQUIPMENT SCHEDULED OR SPECIFIED ON THE DRAWINGS; DUCTWORK DRAWN TO 1/4" SCALE OR THE SCALE SHOWN ON THE DRAWINGS; REFRIGERANT PIPING AND CONTROL WIRING SCHEMATICS CERTIFIED BY THE AIR CONDITIONING EQUIPMENT MANUFACTURER. FAILURE TO SUBMIT REFRIGERANT PIPING DRAWINGS SHALL BE CAUSE FOR REJECTION OF THE ENTIRE SUBMITTAL. LONG LINE REFRIGERANT PIPING APPLICATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT SPLIT SYSTEM LONG-LINE APPLICATION GUIDELINE.

6. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

7. ALL MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER.

8. ALL HVAC COMPRESSORS SHALL HAVE EXTENDED 4-YEAR MANUFACTURER'S WARRANTY FOR A 5-YEAR TOTAL WARRANTY.

9. FOR EXACT LOCATION OF OUTDOOR AIR CONDITIONING UNITS, SEE ARCHITECTURAL DRAWINGS.

10. INSTALL ROOF MOUNTED OUTDOOR AIR CONDITIONING EQUIPMENT LEVEL ON SNOW LEGS. ALL ROOFTOP MOUNTED EQUIPMENT SHALL BE INSTALLED PER DETAILS AND AS RECOMMENDED BY THE MANUFACTURER.

11. PORTIONS OF DUCTWORK AND PIPE INSULATION VISIBLE THROUGH AIR DISTRIBUTION DEVICES IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.

12. MOUNT TOP OF THERMOSTATS 46" AFF UNLESS NOTED OTHERWISE. PROVIDE CLEAR LOCKING GUARD ASSEMBLIES FOR ALL PUBLIC AREA THERMOSTATS. COORDINATE THERMOSTAT LOCATIONS WITH OTHER TRADES. ALL THERMOSTATS SHALL BE ADA COMPLIANT.

13. ALL WORK SHALL BE COORDINATED AND PERFORMED WITH PRIOR APPROVAL FROM THE OWNER TO SUIT HIS OPERATING CONDITIONS.

14. ANY EXISTING WALL, FLOOR, OR CEILING SURFACE THAT IS DISTURBED DURING THE COURSE OF THE HVAC WORK SHALL BE REPAIRED TO MATCH NEW AND/OR EXISTING CONDITIONS.

16. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. TO FIT WITHIN THE SPACE ALLOWED BY THE ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING ANY STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.

17. ALL PIPE AND DUCT PENETRATIONS OF FIRE AND/OR SMOKE-RATED ASSEMBLIES SHALL BE FIRE-STOPPED AS REQUIRED TO RESTORE THE ASSEMBLY TO ITS ORIGINAL INTEGRITY. FIRE BARRIER PRODUCTS SHALL BE AS MANUFACTURED BY TREMCO, HILTI, 3M, STI OR APPROVED EQUAL.

18. PROVIDE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS AND IN WALL STRUCTURE TO ALLOW ADEQUATE ROOM FOR MAINTENANCE OF EQUIPMENT AND BALANCING OF SYSTEMS. ACCESS PANELS IN CEILING AND WALLS SHALL BE PROVIDED WHERE SHOWN ON THE DRAWINGS OR NECESSARY TO ACCESS DAMPERS, VALVES, ETC. COORDINATE EXACT LOCATION OF ALL ACCESS PANELS WITH THE ARCHITECT DURING THE SHOP DRAWING PROCESS.

19. ALL MECHANICAL EQUIPMENT SHALL BE LABELED WITH A SEMI-RIGID PLASTIC LAMINATE NAMEPLATE WITH 2" HIGH WHITE LETTERS ON A BLACK BACKGROUND SECURELY AFFIXED TO THE EQUIPMENT. THE NAMEPLATE SHALL SHOW THE EQUIPMENT TAG USED ON THESE DRAWINGS. ON RESIDENTIAL PROJECTS, THE NAMEPLATE ON THE OUTDOOR EQUIPMENT SHALL INDICATE THE DWELLING UNIT NUMBER IT SERVES AS WELL AS THE EQUIPMENT ID TAG.

20. REFER TO ARCHITECTURAL PLANS FOR ALL FURRDOWN CEILING AREAS. CONTRACTOR SHALL ADVISE ARCHITECT AND ENGINEER OF ANY CONFLICTS BETWEEN ARCHITECTURAL AND MECHANICAL DRAWINGS.

21. PANCAKE STYLE AIR HANDLERS SHALL BE INSTALLED IN A MINIMUM 14-INCH DEEP INSIDE CLEAR FURRDOWN, REFERENCE ARCHITECTURAL PLANS.

22. REFER TO ARCHITECTURAL PLANS FOR FLOOR AND CEILING ASSEMBLY UL RATINGS AND DETAILS.

23. All MATERIALS EXPOSED WITHIN HVAC PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING INDEX OF NOT MORE THAN 50 UNLESS OTHERWISE ALLOWED BY CODE.

24. THE FIRE SPRINKLER CONTRACTOR SHALL INSTALL AND LOCATE ALL FIRE SPRNKLER PIPING TO PREVENT PIPING FROM THE POTENTIAL OF FREEZING. THE FIRE SPRINKLER CONTRACTOR IS REQUIRED TO NOTIFY THE ARCHITECT AND COORDINATE WITH THE MECHANICAL AND ELECTRICAL CONTRACTORS IF HEATING IS REQUIRED.

25. U.N.O. ROOF CURBS SHALL BE CUSTOM CURB OR APPROVED EQUAL (SUBMIT WITH SHOP DRAWINGS).

TESTING, ADJUSTING AND BALANCING (RESIDENTIAL PROJECTS)

1. AFTER CONSTRUCTION, THE ENTIRE HVAC SYSTEM SHALL BE CLEANED, TESTED AND ADJUSTED TO SATISFY THE EQUIPMENT SCHEDULES AND AIR QUANTITIES SHOWN ON THE DRAWINGS. DWELLING LIVING UNITS AND CLUB AREAS DO NOT REQUIRE THAT AN AIR TEST AND BALANCE BE PERFORMED.

2. ALL 100% OUTSIDE AIR SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED TO SATISFY THE EQUIPMENT SCHEDULES AND AIR QUANTITIES SHOWN ON THE DRAWINGS.

MECHANICAL/ELECTRICAL COORDINATION:

1. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN THEREIN. SHOP DRAWING SUBMITTALS SHALL CLEARLY STATE THAT THE ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT HAS BEEN COORDINATED WITH THE ELECTRICAL CONTRACT DOCUMENTS AND THE ELECTRICAL CONTRACTOR.

2. ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL BE INSTALLED WITH DISCONNECT SWITCHES AT EACH PIECE OF EQUIPMENT. COORDINATE SWITCH TYPE (FUSED OR NON-FUSED) WITH EQUIPMENT CHARACTERISTICS, MANUFACTURER'S RECOMMENDATIONS AND THE ELECTRICAL DRAWINGS.

3. ALL REQUIRED CONTROL WIRING (INCLUDING POWER WIRING REQUIRED FOR CONTROL PANELS, DEVICES, ETC.) NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE INCLUDED AS PART OF THE MECHANICAL WORK. WIRING IN HVAC PLENUM SPACES SHALL BE INSTALLED ACCORDING TO CODE REQUIREMENTS.

4. UNLESS NOTED OTHERWISE, TRANSFORMERS, CONTROLS AND CONTROL WIRING REQUIRED FOR ALL MECHANICAL SYSTEMS SHALL BE FURNISHED WITH THE EQUIPMENT IT SERVES AND INSTALLED BY THE MECHANICAL CONTRACTOR. MOTOR STARTERS FOR HVAC EQUIPMENT SHALL BE FURNISHED WITH THE MOTOR OR APPARATUS WHICH IT OPERATES. MOTOR STARTER INSTALLATION SHALL BE BY THE DIVISION 26 CONTRACTOR.

DUCT SMOKE DETECTORS:

1. ALL FANS SUPPLYING MORE THAN 2000 CFM OF AIR TO ANY SPACE SHALL BE INSTALLED WITH A SMOKE DETECTOR IN THE SUPPLY(100% OA UNITS) OR RETURN (SPLIT-SYSTEMS) DUCTWORK. DUCT SMOKE DETECTORS SHALL BE INSTALLED IN THE RETURN AIR PATH OF AIR DISTRIBUTION SYSTEMS UTILIZING A COMMON SUPPLY AND/OR RETURN AIR PLENUM WITH A COMBINED DESIGN CAPACITY GREATER THAN 2000 CFM.

2. THE SMOKE DETECTOR SHALL BE WIRED TO STOP THE FAN UPON DETECTION OF SMOKE, AND SIGNAL THE BUILDING FIRE ALARM CONTROL PANEL. THE SMOKE DETECTOR SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR, MOUNTED IN THE DUCT BY THE MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.

AIR DISTRIBUTION:

1. SUPPLY, RETURN AND O.A. DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEETMETAL IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS, LATEST EDITION AND IMC CHAPTER 6 AS REQUIRED. ALL JOINTS AND SEAMS IN ALL SHEETMETAL DUCTWORK SHALL BE SEALED WITH DUCT SEALER.

2. ALTERNATE SUPPLY AND RETURN AIR DUCTWORK (DWELLING UNITS ONLY) - FIBERGLASS DUCT BOARD (MINIMUM INSULATION VALUE OF R-6, R-8 WHEN LOCATED OUTSIDE THE THERMAL ENVELOPE OF THE BUILDING, OR GREATER WHERE REQUIRED BY APPLICABLE ENERGY CODE) WITH GLASS FABRIC REINFORCED VAPOR BARRIER. FIBERGLASS DUCTWORK AND TAPING SYSTEM SHALL BE U.L. 181 LISTED AND SHALL BEAR THE U.L. LABEL. ALL FIBERGLASS DUCTWORK AND ACCESSORIES SHALL BE FABRICATED BY A MANUFACTURER'S AUTHORIZED FABRICATOR, SHALL BE INSTALLED WITH THE FABRICATOR'S SUPERVISION AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. FIBERGLASS DUCTWORK SHALL NOT BE USED OUTDOORS. DUCT BOARD SHALL BE JOHNS MANVILLE SUPERDUCT RC OR EQUAL.

3. EXTERIOR SUPPLY AND RETURN DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEETMETAL WITH ALL SEAMS CAULKED AND SEALED WEATHERTIGHT.

4. ALL OPEN ENDED DUCTS AND FAN OUTLETS SHALL HAVE ½" X ½" HARDWARE CLOTH AFFIXED TO THE OPENING.

5. EXHAUST DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED TO SMACNA STANDARDS AND SHALL NOT BE INSULATED UNLESS NOTED OTHERWISE.

6. ALL DUCTWORK SHALL BE SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE. DUCT SUPPORTS AND ATTACHMENT TO STRUCTURE SHALL BE PER SMACNA STANDARDS.

7. FLEXIBLE DUCTWORK SHALL BE THERMAFLEX M-KE (U.L. 181 LISTED, CLASS 1 FLEXIBLE AIR DUCT) OR EQUAL. PROVIDE MINIMUM INSULATION VALUE OF R-6, R-8 WHEN LOCATED OUTSIDE THE THERMAL ENVELOPE OF THE BUILDING, OR GREATER WHERE REQUIRED BY APPLICABLE ENERGY CODE. AIR CONNECTORS ARE NOT ACCEPTABLE. FLEX DUCT DIAMETER SHALL MATCH DEVICE NECK DIAMETER. PROVIDE ROUND GALVANIZED STEEL DUCT RUNOUTS TO MAINTAIN A MAXIMUM FLEXIBLE DUCT LENGTH OF 8'-0" (EXCEPT IN DWELLING UNITS LENGTH SHALL BE AS INDICATED). FLEXIBLE DUCTWORK SHALL BE INSTALLED AS STRAIGHT AS POSSIBLE AND SHALL BE ROUTED AND SUPPORTED WITHOUT FORMING CRIMPS OR OTHER AIR FLOW RESTRICTIONS. PROVIDE SQUARE TO ROUND ADAPTERS OR BOOTS TO CONNECT TO AIR DEVICE NECK WHEN REQUIRED.

8. COMMON AREAS - ROUND AND FLEXIBLE SUPPLY AIR DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH A SPIN-IN FITTING WITH SCOOP AND BALANCING DAMPER (EXCEPT WHERE INSTALLED ABOVE INACCESSIBLE CEILINGS, THE DAMPER SHALL BE OMITTED AND PROVIDED IN THE AIR DEVICE NECK).

9. DWELLING UNITS - ROUND AND FLEXIBLE SUPPLY AIR DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH A TAB TYPE FITTING. THE DAMPER SHALL BE LOCATED AS SPECIFIED ON THE EQUIPMENT SCHEDULE.

10. TAPE, BED AND SEAL AIR TIGHT ALL PENETRATIONS FROM RETURN AIR PLENUMS TO NON RETURN AIR PLENUMS THAT ARE REQUIRED DUE TO DUCTWORK, PIPING OR OTHER ITEMS.

11. DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

12. EXTERNAL STATIC PRESSURE (ESP) DOES NOT INCLUDE COIL, CASING OR FILTER PRESSURE DROP.

13. INSTALL FIRE DAMPERS IN ALL RATED WALLS AND FLOOR PENETRATIONS. FIRE DAMPERS SHALL BE THE DYNAMIC TYPE WITH BLADES OUT OF THE AIRSTREAM WHERE POSSIBLE. ALL FIRE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF U.L. 555. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF RATED ASSEMBLIES. FIRE DAMPERS MAY BE OMITTED WHERE WALL PENETRATIONS MEET THE ALLOWED EXCEPTIONS OF 2012 IMC SECTION 607.5.2 OR SECTION 607.5.3 AS APPLICABLE.

14. INSTALL SMOKE DAMPERS IN ALL DUCT PENETRATIONS THROUGH SMOKE RATED WALLS. WHERE DUCTS PENETRATE WALLS AND ARCHITECTURAL SHAFTS THAT CARRY BOTH FIRE AND SMOKE RATINGS, THE DAMPERS INSTALLED SHALL BE COMBINATION FIRE AND SMOKE DAMPERS. ALL SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF U.L. 555S. ALL COMBINATION FIRE AND SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF U.L. 555 AND U.L. 555S. SMOKE DAMPERS MAY BE OMITTED WHERE PENETRATIONS MEET THE ALLOWED EXCEPTIONS OF 2012 IMC SECTION 607.5.4.

15. DUCT ACCESS DOORS: PROVIDE ACCESS DOORS IN DUCTWORK AT EACH FIRE, COMBINATION FIRE/SMOKE AND SMOKE DAMPER LOCATION.

16. PROVIDE ALL OUTDOOR AIR INTAKES AND EXHAUST OPENINGS WITH MOTORIZED OR GRAVITY DAMPERS IN ACCORDANCE WITH THE LOCAL ENERGY CODE. DAMPERS SHALL CLOSE WHEN THE VENTILATION SYSTEM IS NOT OPERATING.

17. LOCATIONS OF GRILLES, REGISTERS, AND DIFFUSERS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS WITH LIGHTS, CEILING GRID, ETC. AND ARCHITECTURAL REFLECTED CEILING PLAN.

18. WHERE BALANCING DAMPERS CANNOT BE ACCESSED FROM BELOW THE CEILING, PROVIDE A REMOTE OPERATED DAMPER; YOUNG REGULATOR OR EQUAL.

19. FLEXIBLE DUCT CONNECTORS SHALL BE USED TO CONNECT DUCTWORK AND PLENUMS TO FAN-ROTATING EQUIPMENT; DURODYNE EXCELON OR APPROVED EQUAL. FLEXIBLE CONNECTORS EXPOSED TO THE WEATHER SHALL BE UV AND OZONE RESISTANT. FABRICS, COATING AND ADHESIVES SHALL BE TESTED IN ACCORDANCE WITH UL 701 AND HAVE A FLAME SPREAD/ SMOKE DEVELOPED RATING OF 25/50.

INSULATION:

1. DUCT INSULATION:
   a. DUCT WRAP SHALL BE UL LISTED FIBERGLASS BLANKET INSULATION WITH FOIL VAPOR BARRIER, JOHNS MANVILLE MICROLITE XG OR EQUAL. PUNCTURES AND TEARS IN THE FOIL JACKET SHALL BE PATCHED WITH FOIL TAPE TO MAINTAIN THE INTEGRITY OF THE VAPOR BARRIER. INSULATE SHEET METAL DUCTWORK IN THE THICKNESSES AND DENSITIES AS LISTED BELOW:
      i. SHEET METAL SUPPLY AND OUTSIDE AIR DUCTWORK: 2" THICK, 1 LB/FT3 DENSITY, R-6 MINIMUM INSTALLED.
      ii. SHEET METAL RETURN DUCTWORK IN NON-AIR CONDITIONED AREAS (SUCH AS INTERSTITIAL SPACES AND FLOOR/CEILING ASSEMBLIES): 2" THICK, 1 LB/FT3 DENSITY, R-6 MINIMUM INSTALLED.
      iii. ALL SHEET METAL DUCTWORK LOCATED OUTSIDE OF THE THERMAL ENVELOPE OF THE BUILDING (INCLUDING CRAWL SPACES AND ATTIC SPACES): 3" THICK, ¾" LB/FT3 DENSITY, R-8 MINIMUM INSTALLED.
   b. EXTERIOR DUCTWORK SHALL BE LINED WITH 2" THICK DUCT LINER BOARD (MINIMUM R-8). JOHNS MANVILLE PERMACOTEâ LINACOUSTIC R-300 OR EQUAL. COAT THE EXTERIOR OF THE ENTIRE DUCT SURFACE WITH A RUST INHIBITIVE PAINT. SUBMIT COLOR CHART TO THE ARCHITECT.
   c. KITCHEN HOOD EXHAUST DUCTWORK SHALL BE INSULATED, WHERE REQUIRED, PER NFPA 96 AND LOCAL CODE REQUIREMENTS.
2. PIPE INSULATION:
   a. REFRIGERANT SUCTION PIPING SHALL BE FLEXIBLE ELASTOMERIC TUBING INSULATION, AP/ARMAFLEX PIPE INSULATION WITH REINFORCED LAP SEAL AS MANUFACTURED BY ARMACELL OR EQUAL. INSULATION THICKNESS SHALL BE PER SPECIFICATION. INSULATION SHALL BE SLID OVER PIPING FROM ONE END BEFORE PIPE ENDS ARE JOINED AND SHALL NOT BE SLIT OR CUT. ALL JOINTS AND SEAMS SHALL BE SEALED WEATHER-TIGHT. FINISH COAT FOR FLEXIBLE ELASTOMERIC INSULATION INSTALLED OUTDOORS SHALL BE WATER-BASED LATEX ENAMEL DESIGNED FOR USE OVER ALL FORMS OF FLEXIBLE ELASTOMERIC INSULATION. FINISH COAT SHALL PROVIDE A PROTECTIVE FINISH SUITABLE TO BOTH INDOOR AND OUTDOOR APPLICATIONS, FORMULATED FOR COLD WEATHER FLEXIBILITY TO RESIST CRACKING AND WEATHER-RESISTANT TO ULTRAVIOLET (UV) AND OZONE. COATING SHALL BE ARMAFLEX WB FINISH OR EQUIVALENT.

GAS FLUES (U.L. LISTED):

1. GAS FLUE MATERIAL SHALL BE AS RECOMMENDED BY THE HEATING APPLIANCE MANUFACTURER.

2. SIZING AND ROUTING RESTRICTIONS SHALL BE PER MANUFACTURER'S REQUIREMENTS.

3. TERMINATE ALL GAS FLUE PIPING TO THE OUTDOORS THROUGH ROOF OR EXTERIOR WALL. TERMINATION SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS AND FLASHED AND SEALED WEATHERTIGHT.

PIPING:

1. REFRIGERANT PIPING SHALL BE TYPE L OR ACR (AIR CONDITIONING AND REFRIGERATION FIELD SERVICE) COPPER TUBING WITH BRAZED JOINTS.

2. REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE FITTED WITH LOCKING-TYPE TAMPER-RESISTANT CAPS.

3. CONDENSATE FROM ALL AIR CONDITIONING EQUIPMENT SHALL BE TRAPPED AND ROUTED TO THE NEAREST PLUMBING DRAIN. CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC (EXCEPT INSULATED TYPE M COPPER IN HVAC PLENUMS). CONDENSATE SHALL BE PUMPED AS REQUIRED.

DWELLING UNITS:

1. CLOTHES DRYER FLEXIBLE DUCTWORK SHALL BE CONNECTED (BY INSTALLING CONTRACTOR) TO A MANUFACTURED DRYER WALL BOX (DRYERBOX MODEL 425 [FOR UPWARD EXHAUST FLOW] OR MODEL 4D (DOWNWARD EXHAUST FLOW] BY IN-O-VATE TECHNOLOGIES, INC. OR EQUAL). THE FLEXIBLE DUCTWORK SHALL CONNECT THE CLOTHES DRYER TO THE DRYER WALL BOX CONNECTION USING A WORM DRIVE TYPE HOSE CLAMP AND BE INSTALLED AS SHOWN ON THE PLANS. THE LOCATION OF THE CLOTHES DRYER CONNECTION IN THE DWELLING UNIT SHALL BE BASED ON THE CLOTHES DRYER TYPE (STACKED OR SIDE BY SIDE) AND COORDINATED IN THE FIELD.

2. BATHROOM (TOILET) AND CLOTHES DRYER EXHAUST DUCTWORK SHALL BE PROVIDED WITH A BACK-DRAFT DAMPER. BATHROOM EXHAUST FANS MAY HAVE AN INTEGRAL BACK DRAFT DAMPER TO ACCOMPLISH THIS. BATHROOM EXHAUST SHALL INCLUDE AN INSECT SCREEN.

REFER TO BOOK SPECS FOR FULL MECHANICAL SPECIFICATIONS

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ISSUES AND REVISIONS

NO	DATE	DESCRIPTION
	02.14.2014	100% DESIGN DEVELOPMENT
	03.18.2014	25% CONSTRUCTION DOCUMENTS
	07.07.2014	ISSUE FOR PERMIT REVIEW
	08.22.2014	ISSUE FOR PERMIT REVIEW
	09.23.2014	BID SET
	10.20.2014	ISSUE FOR PERMIT

CHRISTOPHER J. CLAUDET
104587

10-17-14

SEAL

PRESTON
HOLLOW VILLAGE
PHASE 2

THE KROENKE GROUP

Provident

SHEET TITLE

NOTES AND
SCHEDULES

SHEET NUMBER

MD00.00

ZCA PROJECT # 20095.02

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